Marsh (O. C.) Recent Polydactyle Horses. 8vo. [*New Haven* 1892.] The Author.

Milne (J.), F.R.S., and W. K. Burton. The Great Earthquake in Japan, 1891. Oblong. *Yokohama* [1892]. The Authors.

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The Lieut.-Governor of Bengal.

Rütimeyer (L.) Die Eocäne Säugethier-Welt von Egerkingen. 4to. *Zürich* 1891. The Author.

Schaible (C. H.) The State and Education: an Historical and Critical Essay. Second edition 8vo. *London* 1884.
The Author.

May 5, 1892.

The LORD KELVIN, President, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

In pursuance of the Statutes, the names of the Candidates recommended for election into the Society were read from the Chair as follows :—

Armstrong, Robert Young, Lieut.-Col. R.E.

Beddard, Frank Evers, M.A.

Fleming, Professor John Ambrose, D.Sc.

Foster, Professor Clement Le Neve, D.Sc.

Gadow, Hans, M.A., Ph.D.

Giffen, Robert, LL.D.

Gotch, Professor Francis, M.A., M.R.C.S.

Herdman, Professor William Abbott, D.Sc.

Hutton, Frederick Wollaston, Capt. R.E.

Joly, John, M.A.

Larmor, Joseph, D.Sc.

Miall, Professor Louis C.

Peach, Benjamin Neve, F.R.S.E.

Pedler, Professor Alexander, F.I.C.

Waller, Augustus D., M.D.

The following Papers were read :—

I. " Transmission of Sunlight through the Earth's Atmosphere. Part II. Scattering at Different Altitudes." By Captain W. DE W. ABNEY, C.B., D.C.L., F.R.S. Received April 7, 1892.

(Abstract.)

In this paper the results of observations made by exposing platino-type paper are recorded, and it is shown that the total intensity of light as thus registered is the same as if observations had been made on a ray of $\lambda 4240$ alone. The observations were made at altitudes varying from sea-level to 12,000 feet, in different countries, at different times of the year, and during four to five years. The instrument in which the exposures were made is described, as also the method of deriving the intensity of light from the developed prints. The results of these observations agree closely with those obtained by the measures of the spectrum which was described in Part I of this subject. The value of k in the formula (1) $I' = \epsilon^{-k\lambda^{-4}x}$ (from which can be calculated the loss of intensity of a ray of any particular wave-length) was found to be 0.00146 at sea-level. It was also found that k apparently varied as h^2, h being the barometric pressure. A table is attached, showing the value of the transmitted light in the formula (2) $I' = Ia^x$, where a is a constant and x the air thickness in terms of the vertical thickness, μ being the formula $I' = I\epsilon^{-\mu x}$, from which (1) and (2) are both shown to be derived.

Bar. in inches.	μ.	a.	Bar. in inches.	μ.	a.
30	0·154	0·856	24	0·098	0·908
29	0·144	0·866	23	0·090	0·915
28	0·134	0·875	22	0·083	0·922
27	0·124	0·884	21	0·075	0·928
26	0·115	0·891	20	0·068	0·934
25	0·107	0·899	19	0·062	0·940